WHAT IS CLAIMED IS:

1. A vacuum arc vapor deposition apparatus for depositing a film on a deposition target object by using a vapor source inducing vacuum arc discharge between a cathode and an anode by a trigger electrode opposed to the cathode, comprising:

a shield member moved to and away from a position between said vapor source and a holder for supporting the deposition target object;

a drive device for locating said shield member selectively in a shield position between said vapor source and the holder, and a retracted position shifted from said shield position;

a detector detecting turn-on/off of vacuum arc discharge of said vapor source; and

a control portion controlling said drive device to locate said shield member in said shield position when said detector detects turn-off of the vacuum arc discharge, and to locate said shield member in said retracted position when a time required for stabilizing vacuum arc discharge elapses after said detector detected turn-on of the vacuum arc discharge.

2. The vacuum arc vapor deposition apparatus according to claim 1, further comprising:

a magnetic filter provided for said vapor source, and having a solenoid coil for forming a magnetic field controlling an ionized cathode material produced from said cathode by the vacuum arc discharge to deflect said ionized material toward said holder; and a power source device energizing said solenoid coil.

3. The vacuum arc vapor deposition apparatus according to claim 2, wherein

said control portion controls said power source device such that said power source device interrupts the energizing of said solenoid coil when said detector detects the turn-off of the vacuum arc discharge, and energizes said solenoid coil upon elapsing of a time required for stabilizing the vacuum arc discharge after said detector detected the turn-on of the vacuum arc discharge.

4. The vacuum arc vapor deposition apparatus according to claim 1, wherein

said detector is a current detector detecting a discharge current based on the vacuum arc discharge, said control portion determines that the vacuum arc discharge is off when said current detector does not detect a predetermined discharge current value, and said control

portion determines that the vacuum arc discharge is on when said current detector detects said predetermined discharge current value.

5. The vacuum arc vapor deposition apparatus according to claim 1, wherein

said detector is a voltage detector detecting a voltage applied to said cathode, said control portion determines that the vacuum arc discharge is off when said voltage detector does not detect a predetermined discharge voltage value, and said control portion determines that the vacuum arc discharge is on when said voltage detector detects said predetermined discharge voltage value.

6. The vacuum arc vapor deposition apparatus according to claim 1, wherein

said cathode is primarily made of carbon.

7. The vacuum arc vapor deposition apparatus according to claim 1, wherein

said cathode is primarily made of carbon, and said control portion sets, for the vapor source having the cathode primarily made of carbon, a time from one to three seconds as the time required for stabilizing the

vacuum arc discharge after detection of the turn-on of the vacuum arc discharge by said detector.

8. A vacuum arc vapor deposition apparatus for depositing a film on a deposition target object by using a plurality of vapor sources inducing vacuum arc discharge between a cathode and an anode by a trigger electrode opposed to the cathode, comprising:

shield members provided for said plurality of vapor sources, respectively;

drive devices provided for said shield members, respectively;

detectors detecting turn-on/off of the vacuum arc discharge of the vapor sources, respectively; and

a control portion, wherein

each of said shield members is movable to and from a position between the corresponding vapor source and a holder supporting the deposition target object, and each of said drive devices locates said shield member selectively in a shield position between said vapor source and the holder, and a retracted position retracted from said shield position, and

said control portion controls each of said drive devices to locate all of said shield members in said shield position when at least one of said detectors

detects the turn-off of the vacuum arc discharge, and to locate all of said shield members in said retracted position when a time required for stabilizing all the vacuum arc discharges elapses after all of said detectors detected the turn-on of the vacuum arc discharge.

9. The vacuum arc vapor deposition apparatus according to claim 8, further comprising:

a magnetic filter provided for at least one of said vapor sources, and having a solenoid coil for forming a magnetic field controlling an ionized cathode material produced from said cathode by the vacuum arc discharge to deflect said ionized material toward said holder; and a power source device energizing said solenoid coil.

10. The vacuum arc vapor deposition apparatus according to claim 9, wherein

said control portion controls said power source device(s) such that each said power source device interrupts the energizing of said solenoid coil when at least one of said detectors detects the turn-off of the vacuum arc discharge, and energizes said solenoid coil upon elapsing of a time required for stabilizing all the vacuum arc discharges after all of said detectors detected the turn-on of the vacuum arc discharge.

11. The vacuum arc vapor deposition apparatus according to claim 8, wherein

said detector is a current detector detecting a discharge current based on the vacuum arc discharge, said control portion determines that the vacuum arc discharge is off when said current detector does not detect a predetermined discharge current value, and said control portion determines that the vacuum arc discharge is on when said current detector detects said predetermined discharge current value.

12. The vacuum arc vapor deposition apparatus according to claim 8, wherein

said detector is a voltage detector detecting a voltage applied to said cathode, said control portion determines that the vacuum arc discharge is off when said voltage detector does not detect a predetermined discharge voltage value, and said control portion determines that the vacuum arc discharge is on when said voltage detector detects said predetermined discharge voltage value.

13. The vacuum arc vapor deposition apparatus according to claim 8, wherein

at least one of said cathodes is primarily made of carbon.

14. The vacuum arc vapor deposition apparatus according to claim 8, wherein

at least one of said cathodes is primarily made of carbon, and said control portion sets, for each of the vapor sources having the cathode primarily made of carbon, a time from one to three seconds as the time required for stabilizing the vacuum arc discharge after detection of the turn-on of the vacuum arc discharge by said detector.

15. A vacuum arc vapor deposition apparatus for depositing a film on a deposition target object supported by a holder by using a vapor source inducing vacuum arc discharge between a cathode and an anode by a trigger electrode opposed to the cathode, comprising:

a magnetic filter having a solenoid coil for forming a magnetic field, and controlling dispersion of an ionized cathode material produced from said cathode by the vacuum arc discharge to move the ionized material toward said holder;

a power source device energizing said solenoid coil;

a detector detecting turn-on/off of vacuum arc discharge of said vapor source; and

a control portion controlling said power source device to stop energizing of said solenoid coil when said detector detects the turn-off of the vacuum arc discharge, and to energize said solenoid coil when a time required for stabilizing the vacuum arc discharge elapses after the detector detected the turn-on of the vacuum arc discharge.

16. The vacuum arc vapor deposition apparatus according to claim 15, wherein

said detector is a current detector detecting a discharge current based on the vacuum arc discharge, said control portion determines that the vacuum arc discharge is off when said current detector does not detect a predetermined discharge current value, and said control portion determines that the vacuum arc discharge is on when said current detector detects said predetermined discharge current value.

17. The vacuum arc vapor deposition apparatus according to claim 15, wherein

said detector is a voltage detector detecting a voltage applied to said cathode, said control portion determines that the vacuum arc discharge is off when said voltage detector does not detect a predetermined

discharge voltage value, and said control portion determines that the vacuum arc discharge is on when said voltage detector detects said predetermined discharge voltage value.

18. The vacuum arc vapor deposition apparatus according to claim 15, wherein

said cathode is primarily made of carbon.

19. The vacuum arc vapor deposition apparatus according to claim 15, wherein

said cathode is primarily made of carbon, and said control portion sets, for the vapor source having the cathode primarily made of carbon, a time from one to three seconds as the time required for stabilizing the vacuum arc discharge after detection of the turn-on of the vacuum arc discharge by said detector.

20. A vacuum arc vapor deposition apparatus for depositing a film on a deposition target object supported by a holder by using a plurality of vapor sources inducing vacuum arc discharge between a cathode and an anode by a trigger electrode opposed to the cathode, comprising:

magnetic filters arranged for said plurality of vapor sources, respectively;

power source devices for energizing said magnetic filters, respectively;

detectors detecting turn-on/off of the vacuum arc discharge of said vapor sources, respectively; and

a control portion, wherein

each of said magnetic filters has a solenoid coil to be energized by said power source device for forming a magnetic field, and said solenoid coil forms a magnetic field controlling dispersion of an ionized cathode material produced from said cathode by the vacuum arc discharge to move the ionized material toward said holder, and

said control portion controls said power source devices to stop energizing of all of said solenoid coils when at least one of said detectors detects the turn-off of the vacuum arc discharge, and to energize all of said solenoid coils when a time required for stabilizing all of said vacuum arc discharges elapses after all of said detectors detected the turn-on of the vacuum arc discharge.

21. The vacuum arc vapor deposition apparatus according to claim 20, wherein

said detector is a current detector detecting a discharge current based on the vacuum arc discharge, said

control portion determines that the vacuum arc discharge is off when said current detector does not detect a predetermined discharge current value, and said control portion determines that the vacuum arc discharge is on when said current detector detects said predetermined discharge current value.

22. The vacuum arc vapor deposition apparatus according to claim 20, wherein

said detector is a voltage detector detecting a voltage applied to said cathode, said control portion determines that the vacuum arc discharge is off when said voltage detector does not detect a predetermined discharge voltage value, and said control portion determines that the vacuum arc discharge is on when said voltage detector detects said predetermined discharge voltage value.

23. The vacuum arc vapor deposition apparatus according to claim 20, wherein

at least one of said cathodes is primarily made of carbon.

24. The vacuum arc vapor deposition apparatus according to claim 20, wherein

at least one of said cathodes is primarily made of carbon, and said control portion sets, for each of the vapor sources having the cathode primarily made of carbon, a time from one to three seconds as the time required for stabilizing the vacuum arc discharge after detection of the turn-on of the vacuum arc discharge by said detector.